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(54) **STOVE TOP DEVICE**

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(57) **ABSTRACT**

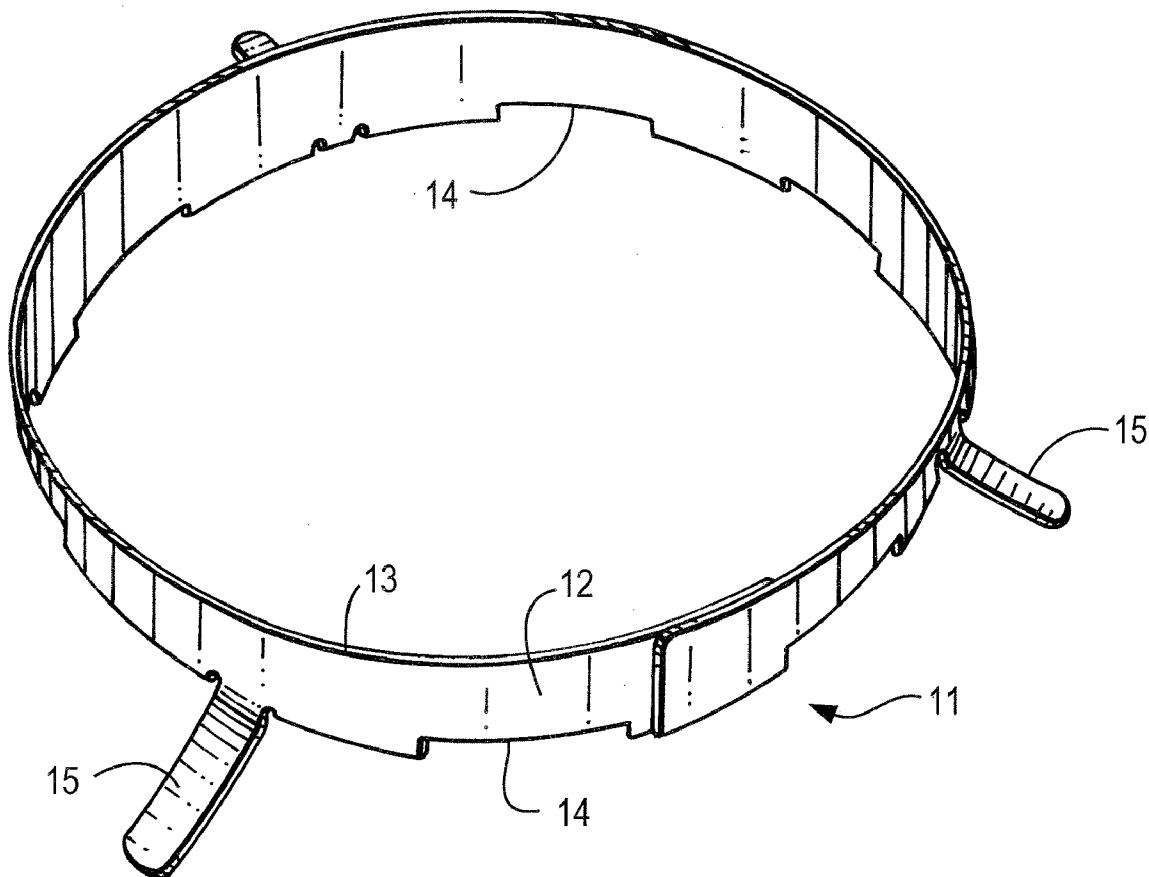
An improved gas burner system is disclosed. The burner system comprises a conventional household gas burner with a grill for supporting a cooking utensil, a head generating an annular flame and a device placed around the head and preferably extending to the grill. The device has a wall for containing the flame and the hot air from the head and has a diameter small enough to effectively contain the heat and large enough to allow effective air flow to the flame. The device includes a body forming the cylindrical surface and a support for variably positioning the body around the head. The support is made of an alloy that resists distortion and discoloration by the heat from the flame. The ring can be cylindrical member made of metal or a ceramic heat absorbing ring.

(21) Appl. No.: **12/126,328**

(22) Filed: **May 23, 2008**

Related U.S. Application Data

(60) Provisional application No. 60/929,636, filed on Jul. 6, 2007.



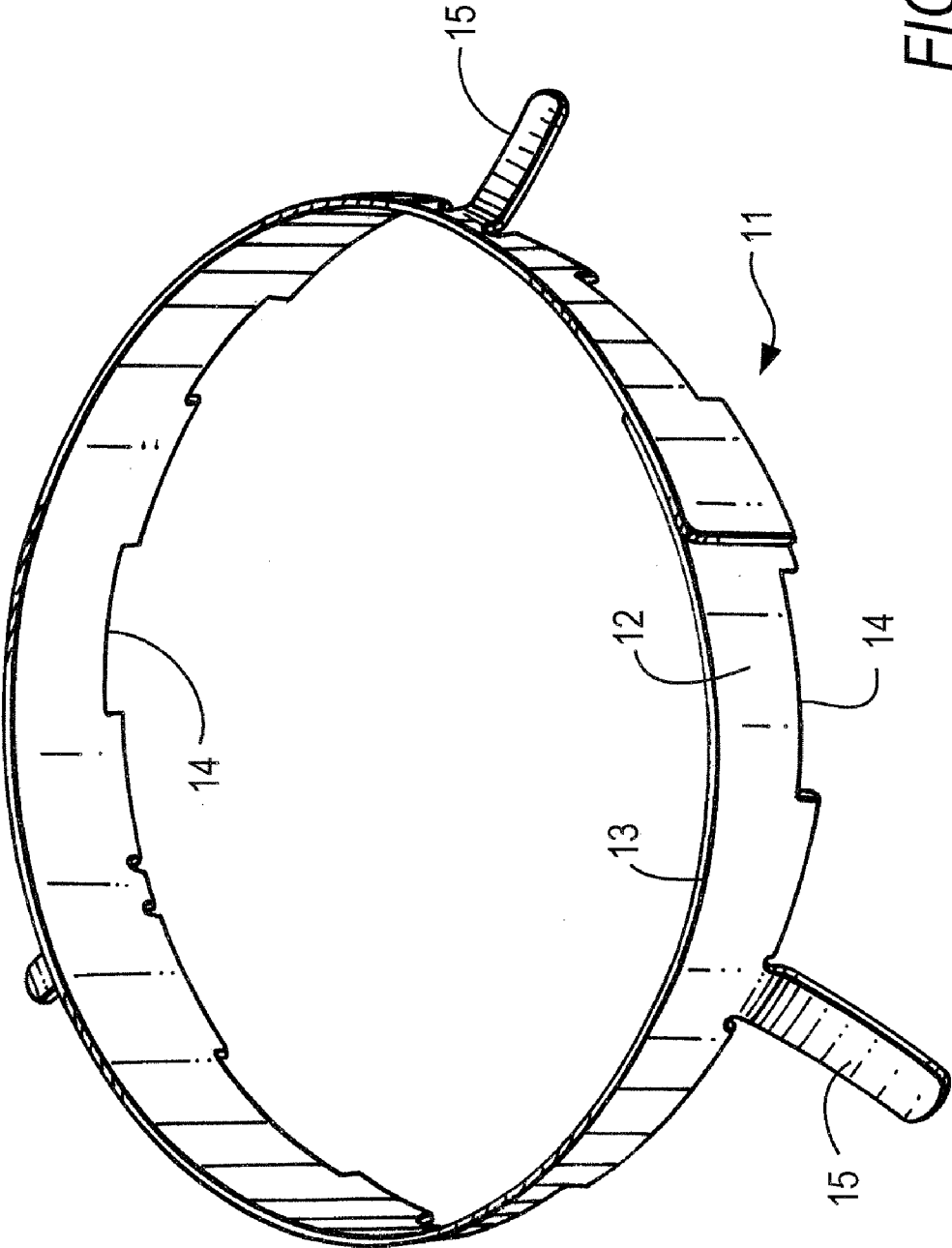


FIG. 1

FIG. 2

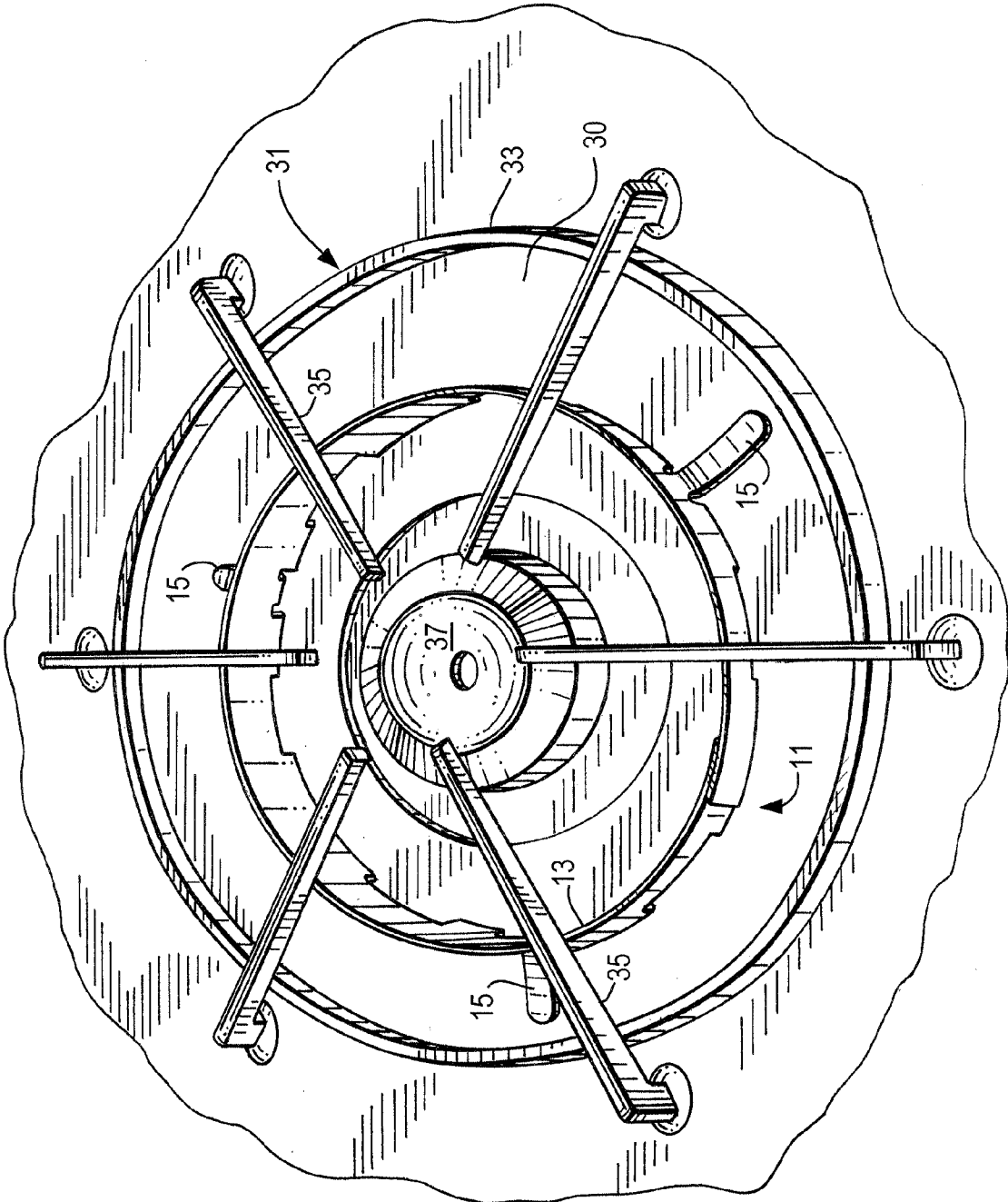


FIG. 3

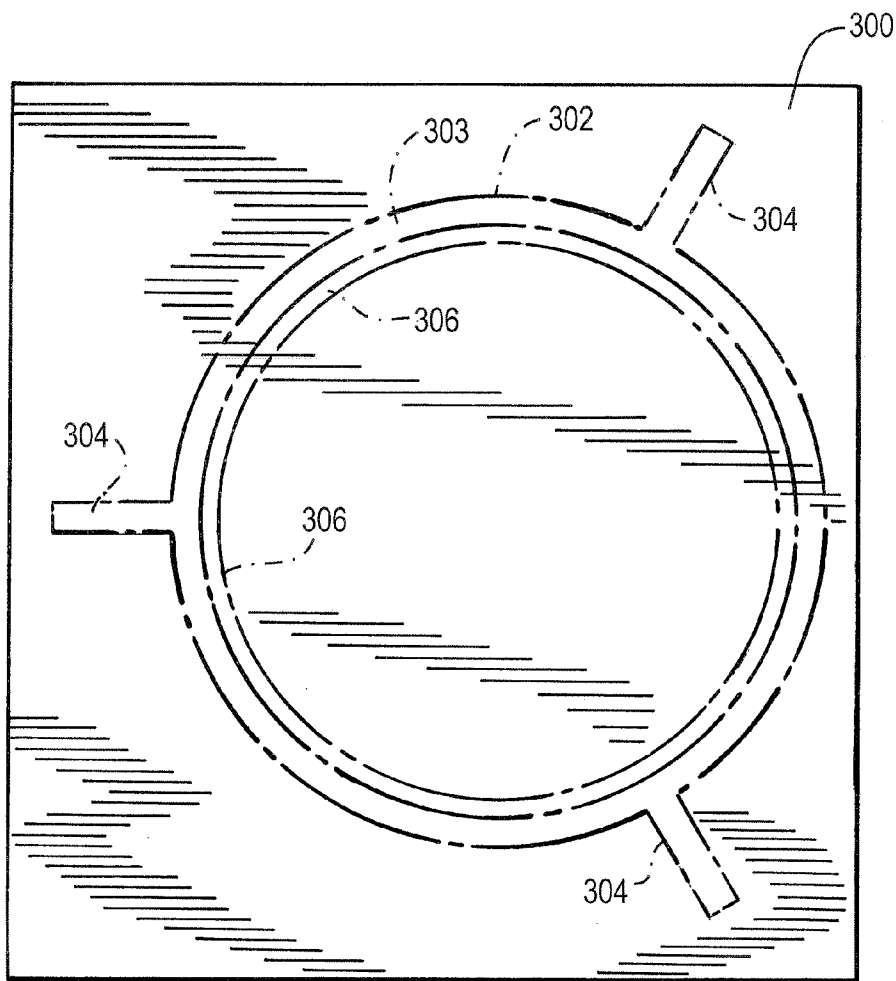
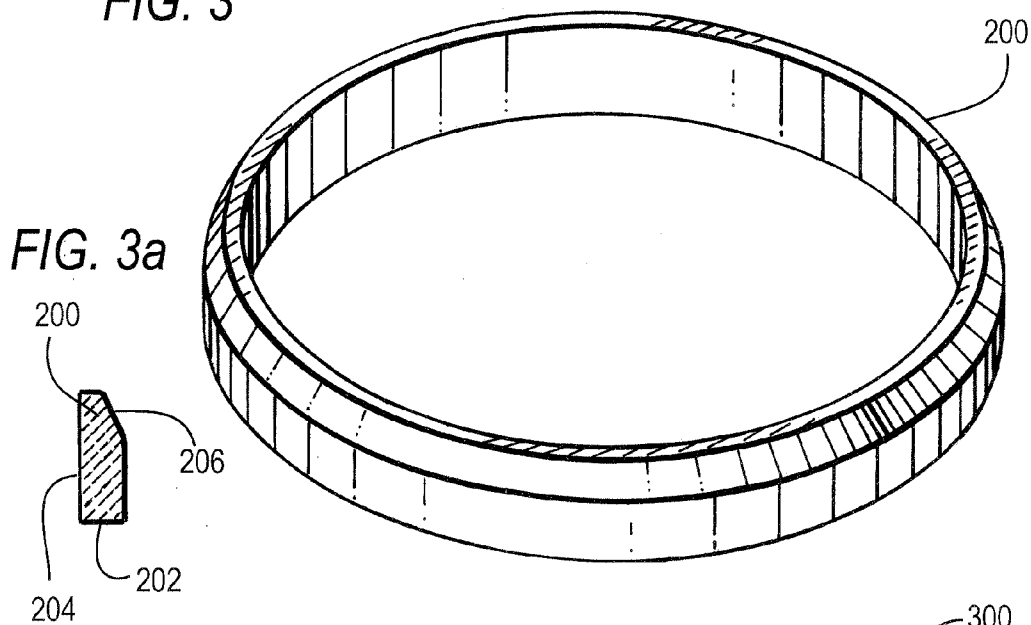


FIG. 4

FIG. 5

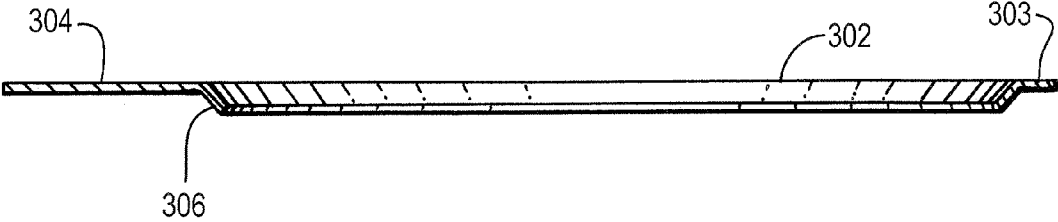


FIG. 6

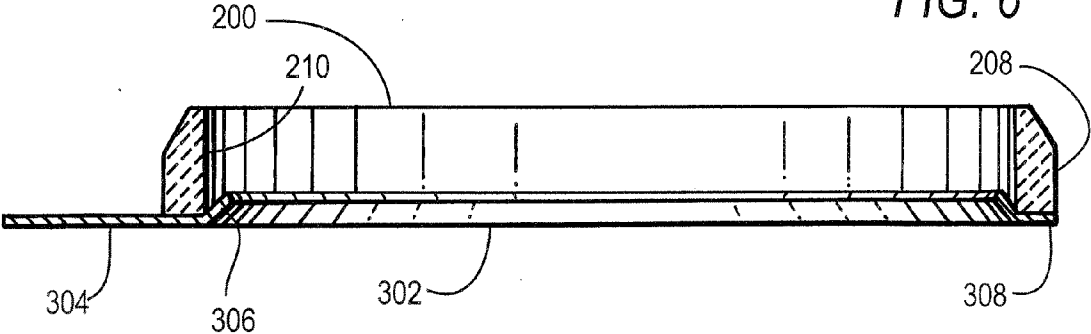
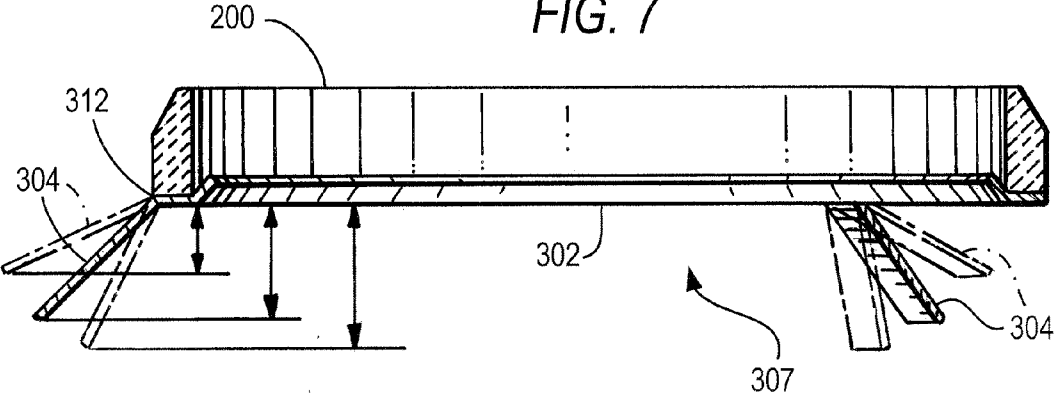


FIG. 7



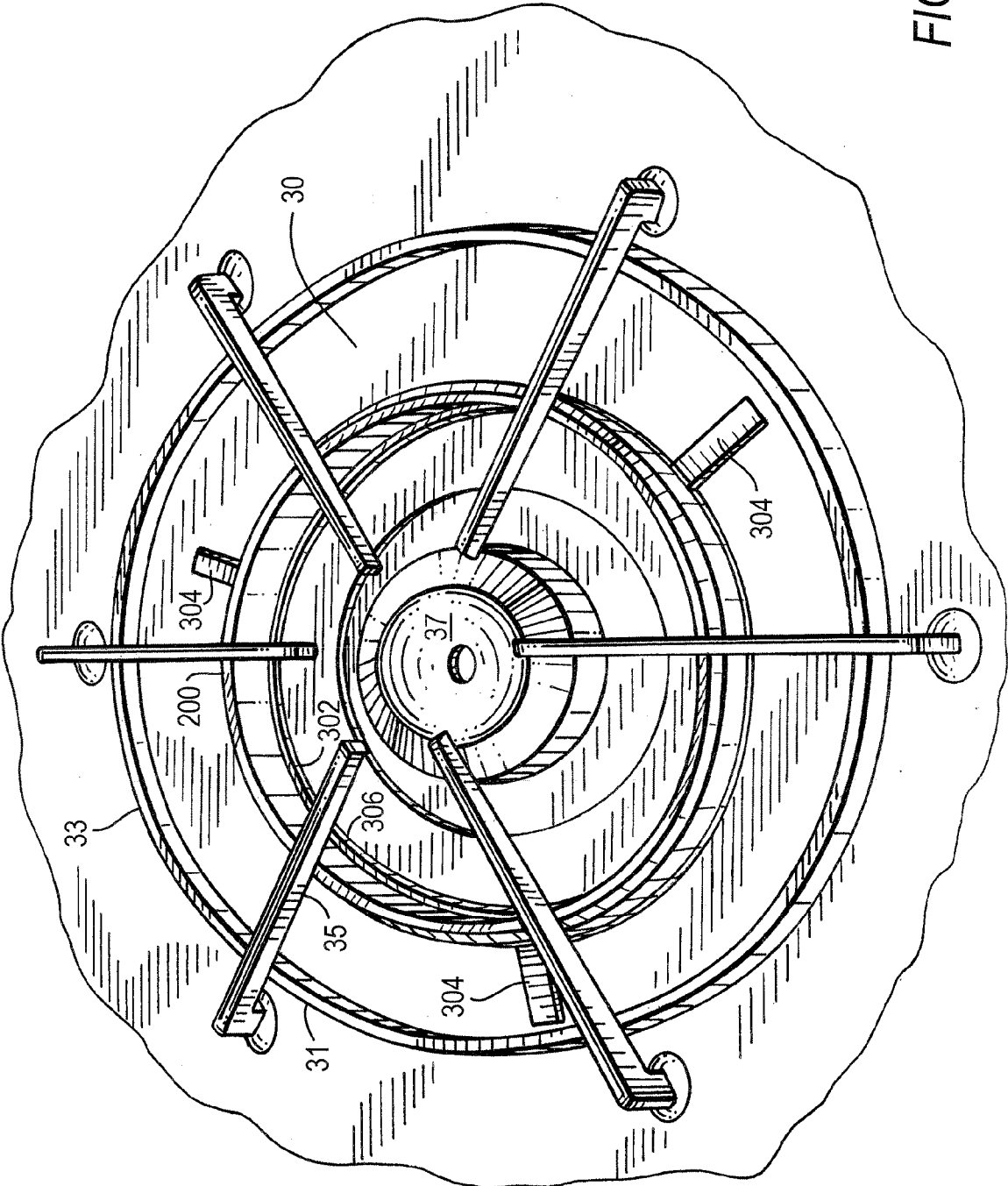


FIG. 8

FIG. 9

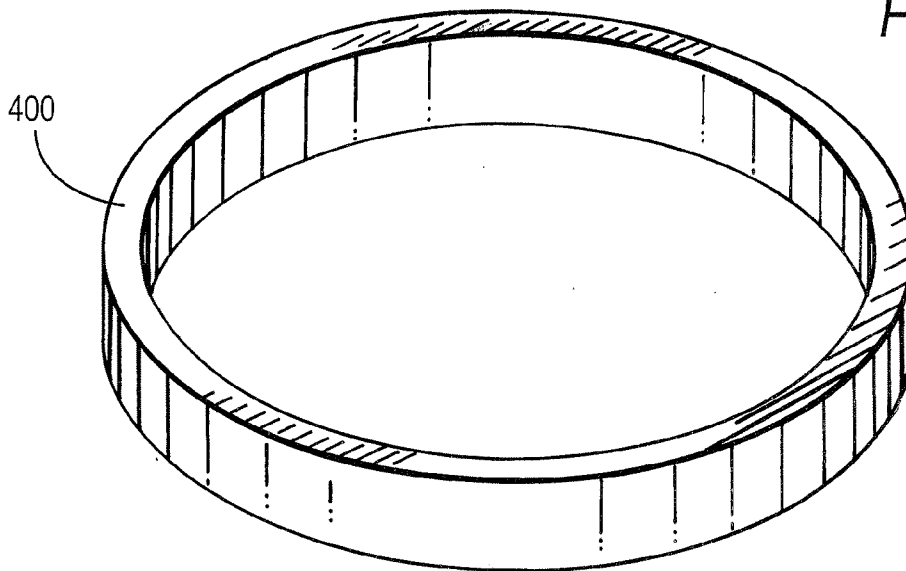
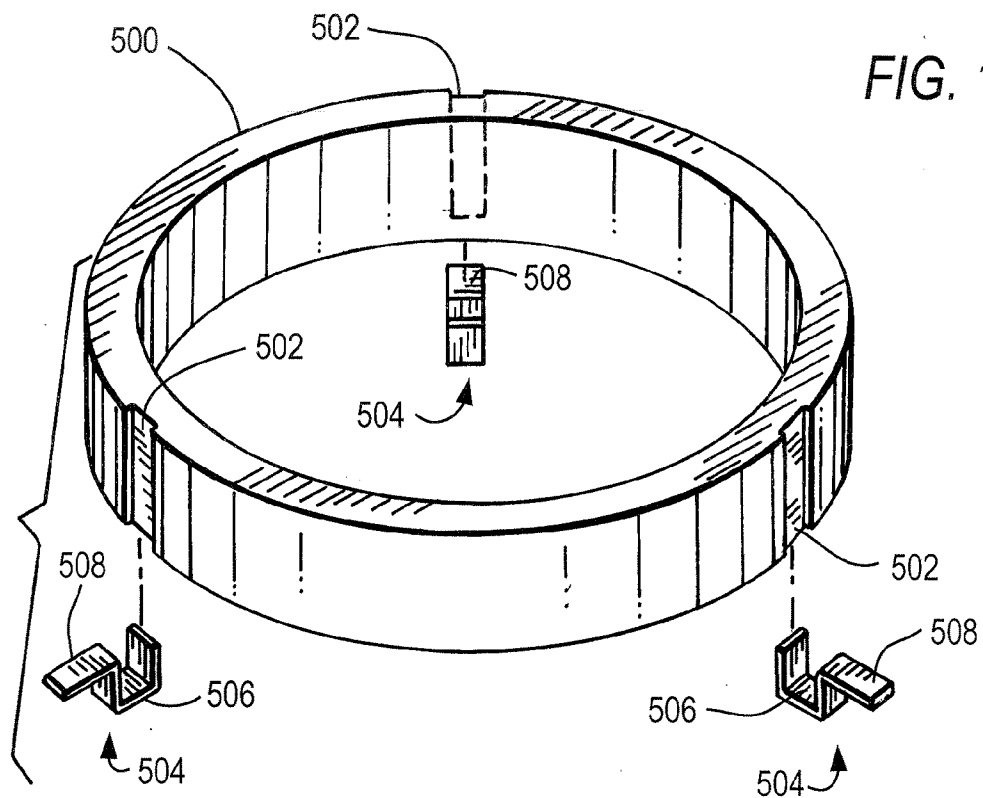


FIG. 10



STOVE TOP DEVICE

RELATED APPLICATIONS

[0001] This application claims priority to Provisional Application Ser. No. 60/929,636 filed on May 23, 2007 and incorporated herein by reference in its entirety.

FIELD OF INVENTION

[0002] This invention relates to a stove top device, and, more particularly, to a device which is placed over a gas range burner so that less gas is consumed.

BACKGROUND OF THE INVENTION

[0003] Gas cooking is perhaps the most widely used type of cooking found in homes and apartments. Gas cooking is much more powerful and efficient than electric ranges and much easier to control than wood or charcoal cooking. The gas flame is selectively turned on or off, and/or raised and lowered in intensity by the operator by simply adjusting the controls of the oven or cook top. These adjustments increase and decrease the flow of gas to the burner. When more gas flows, the flame is stronger; when less gas flows the flame is weaker. Moreover, since the gas flame reacts instantly to the operator's selection, cooking is made far simpler.

[0004] A conventional gas stove or cook top usually includes anywhere from four to six individually controlled burners in which a gas flame is controllably operated. Each burner typically includes an annular metal grill overlying the burner. The grill is designed to selectively accommodate a pot or other cooking utensils seated thereon.

[0005] While gas cooking is advantageous, it does have certain deficiencies. The gas flame tends to operate somewhat inefficiently. Particularly, much of the heat generated by the gas flame is not directed precisely upward towards the pot, but is instead angled outward so that a substantial quantity of heat is lost around the edge of the pot. In addition, gas flames tend to emit pollutants into the environment, more so when the flame is operated at a "high" setting in order to compensate for heat loss.

[0006] U.S. Pat. No. 5,791,333 ("the '333 patent") describes a prior art gas range burner system. The system includes multiple elements that fit together to contain the heat created by a gas burner, while advantageous, the system has three important limitations. First, the metal used in the flame directing element of the '333 patent is prone to discoloration and warping under high heat conditions to the point where it becomes esthetically unacceptable. Second, the flame directing element of the '333 invention is too narrow and fails to allow enough air flow to reach the flame. Again, this limitation is most problematic under high heat conditions. And third, the outer ring 19 of the '333 invention does not allow air to travel under the ring to the flame.

[0007] When an insufficient supply of air reaches the flame, carbon monoxide gas is produced. Carbon monoxide is a toxic gas most often created when a hydrocarbon is burdened with an insufficient supply of oxygen gas. Low levels of carbon monoxide are present in the normal atmosphere, but increased levels can lead to headaches, nausea and even death. Carbon monoxide is very dangerous because the gas has no odor and no color and often is not detected until it is too late.

[0008] Accordingly, it would be desirable to provide an improved gas burner system which overcomes these disadvantages,

thereby causing the cooking experience to be faster, less costly and less irritation from escaping gas fumes.

SUMMARY OF THE INVENTION

[0009] An improved burner system for gas ranges is provided for a burner assembly having a floor, a burner head disposed above the floor and in communication with a flammable gas supply and a grill extending over the head to support a cooking utensil such as a pot. The burner head forms a flame arranged in annular pattern around the head and rising upwardly together with a plume of hot air to heat the utensil. In one embodiment, the improved system includes a ring-shaped device having an inner cylindrical wall disposed at the level of the burner head and arranged to constrict laterally the flame and the hot air thereby reducing energy waste. Preferably this cylindrical wall extends upwardly far enough to contact the grill

[0010] In one embodiment the ring-shaped device is formed of sheet metal made of an alloy that resists discoloration and distortion when heated. The device includes legs or other support means to maintain the cylindrical surface at the level of the head. Openings at the bottom of the wall allow air to flow toward the head.

[0011] In another embodiment, the device includes a ceramic ring with a cylindrical inner wall for directing the flame and hot air from the burner head upwardly. The ring is designed to be seated on a burner unit, as well as for selectively receiving a standard annular grill thereon. In use, the annular grill of the burner unit is lifted. Then, the inventive ring is placed directly over the burner head. The annular grill is then placed on top of the inventive ring, firmly pressing down on the device until the grill is properly seated on the cook top. The gas stove or range is then operated as per usual.

[0012] Accordingly, it is an object of the invention to provide an improved gas burner system.

[0013] Still another object of the invention is to provide a gas burner system which substantially reduces the requirement for gas during cooking.

[0014] Yet a further object of the invention is to provide a gas burner system that substantially reduces heat loss during the cooking process.

[0015] Other objects and advantages of the invention will in part be obvious and will in part be apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] For a full understanding of the invention, reference is made to the following description, as well as the attached drawings, in which:

[0017] FIG. 1 is a perspective view of a first embodiment of a device for an improved burner system constructed in accordance with this invention;

[0018] FIG. 2 is a top perspective view showing of an improved burner system incorporating the first embodiment of the device of FIG. 1;

[0019] FIG. 3 is a perspective view of a ceramic ring in accordance with a second embodiment of the device;

[0020] FIG. 3a is a cross-sectional view of the ring of FIG. 3.

[0021] FIG. 4 is a top view of a blank sheet for making the support for the second embodiment of the device;

[0022] FIG. 5 is a side view of the support of for the ring of FIGS. 3 and 4;

[0023] FIG. 6 is a side sectional view of the support and the ring of FIGS. 3-5;

[0024] FIG. 7 is a side sectional view of the support and ring of FIG. 6, with the legs being bent in different positions;

[0025] FIG. 8 is a top perspective view of an improved burner system incorporating the device of FIG. 6 and 7;

[0026] FIG. 9 is a front perspective view of yet another embodiment of the ceramic ring; and

[0027] FIG. 10 is a front perspective view of yet another embodiment of the device.

DETAILED DESCRIPTION OF THE INVENTION

[0028] Referring first to FIG. 1, the first embodiment of the invention is generally indicated at 11, and comprises a ring 13 having a generally cylindrical body 12 and a plurality of supporting feet 15 extending outwardly therefrom. Ring 13 is made from a metal alloy which maintains its shape and does not warp when heated to high temperatures. Moreover, preferably, the metal alloy does not rust. For example the metal alloy may be an INCONEL® alloy 625 or other similar metallic alloy of chrome, nickel or titanium.

[0029] Turning now to FIG. 2, device 11 is shown in use with a burner unit of a conventional gas stove or cook top. The burner unit includes a burner head 37 and an annular grill unit 31. Grill unit 31 includes a circumferential member 33 and a series of radial support brackets 35. As is well known, support brackets 35 are used for supporting a pot or other cooking utensil over the burner unit.

[0030] As shown in FIG. 2, device 11 is placed around head 37 and underneath grill unit 31 in order to channel the gas flame and associated hot air upwardly to the cooking utensil for faster cooking.

[0031] In order for the device 11 to effectively channel heat, without restricting air flow, it must have a diameter large enough to allow sufficient air to reach the gas head for a complete combustion. If the device is too big, it either will not fit on a conventional burner or it will be ineffective. If the device is too small, it will restrict air flow and could create a dangerous carbon monoxide condition. The device 11, or more properly, body 12 ideally has a diameter of approximately 5 inches. More broadly speaking, the inventive device has diameters in the range of 4.5 to 5.5 inches. Preferably, the cylindrical body is formed with several cutouts 14 to provide a cold air flow to the flames from the head. Support feet 15 rest on floor 30 of the burner unit can be adjusted in order to adjust the height of ring 13 by bending them with respect to the cylindrical body 12. Preferably the ring 13 is sized and positioned so it is disposed circumferentially around the flame generated by the head 37 and extends upwardly to contact the brackets 35.

[0032] When the head is lit, air flows under the body 12 and through openings 14 to the head 37. The flame and hot gases resulting from combustion are directed upwardly by the body 12 thereby increasing the effectiveness of the burner.

[0033] A second embodiment of the invention is shown in FIGS. 3-8 and it consists of a ceramic ring 200 and a support 302.

[0034] FIG. 3 shows the ceramic ring 200. The support is substantially circular and constructed of a high heat ceramic with a glaze coating. A cross-sectional view of the ring of FIG. 3 is shown in FIG. 3a. In FIG. 3a, the trapezoidal shape of the ring is made more apparent. The base 202 of the ring is preferably between $\frac{3}{16}$ and $\frac{1}{4}$ of an inch. The total height 204 is preferably $\frac{3}{4}$ of an inch. The beveled surface 206 can be

made of various angles (and therefore various lengths) as necessary to properly fit a grill top. This will be discussed later with regard to FIG. 8. However, as in the previous embodiment, the device of FIG. 8 is sized and shaped so that the inner cylindrical surface of the device (in this case, the inner surface of the ring 200 faces the head 37 and extends upward until it comes into contact with the brackets 35.

[0035] FIGS. 4 and 5 show a metal sheet 300 from which the metal support 302 is formed. A stamper (not shown) is used to cut or punch the metal support 302 from the metal sheet 300. Support 302 includes a flat annular body 303 and a plurality of radial legs 304. The stamper is preferably shaped so that the outer edge of the body 303 is substantially flat but the inner edge is bent downwardly about $\frac{1}{16}$ of an inch to form a lip 306.

[0036] FIG. 6 shows the metal support 302 turned upside down with the ring 200 resting on the body 303. The outer radius of the ring 208 is substantially as the outer radius of the body 303. The lip 306 has a radius slightly less than the inner radius of the ring 200. This creates a seat for the ring 200 concentrically with respect to the lip 306, whereby the ring is restrained from moving laterally.

[0037] The legs 304 can be bent at their interface 312 to the body 303 to adjust the height of body 303 to match the position of the burner head 37 when the device is resting on the floor 30 of the burner system. When the legs 304 are bent, a space 307 is created below the support 302. The space 307 provides for additional air flow to the burner head 37. Moreover, the legs insure that the ceramic ring is positioned with its top surface being preferably in contact with the brackets 35 and its inner surface is facing the head 37.

[0038] FIG. 8 shows the second embodiment of the inventive device being used with a conventional household gas burner head 37. The burner head 37 occupies the center. The support 302 and ring 200 rest around the burner head 37, such that the burner is in or near the center of the ring 200. The grill 33 disposed above the burner head 37 rests on top of the ring 200. The grill 33 consists of an annular grill unit 31 and a plurality of radial support brackets 35. The brackets 35 rest upon the ring 200. If the ring 200 is too high or too low, the height can be adjusted by selectively adapting the legs 304.

[0039] Different ceramic rings can be fit with different shaped grills. For example, an alternate embodiment of the ring, designated by the numeral 400 is shown in FIG. 9. The ring 400 is similar to the ring 200 of FIG. 3, except that it is not beveled. Depending on the shape and structure of the brackets 35, a flat topped ring 400 or a beveled ring 200 may be preferable.

[0040] FIG. 10 shows another embodiment of the inventive device. A ring 500, preferably constructed of ceramic as discussed above, is supported by a plurality of removable legs 504. The removable legs 504 have a U-shaped base 506, with an outwardly projecting extension 508. The U-shaped base 506 is constructed to fit into the slot 502 in the ring 500. The slot 502 is a cut out on the exterior of the ring 500 from top to bottom and used to support and mount the legs to the ring. The depth of slot 502 is just enough to prevent the removable leg 504 from moving around the circumference of the ring 500. The legs are shaped and sized to position the ring 500 so that its inner surface faces the head and its top surface preferably contacts the brackets 35 of the grill.

[0041] The advantage of the embodiments of FIGS. 3-10 is that the hot flame and gasses from the head 37 are restricted laterally and directed upwards toward a pot (not shown) or

other objects to be heated. Therefore, just like in the embodiment of FIGS. 1 and 2, the burner becomes more efficient because less heat is lost to the ambient atmosphere and therefore a lower setting for the gas flow can be used for cooking. A further advantage of these latter embodiments is that the ceramic ring protects the support from contact with the flame and hot gases and insures that the support does not get discolored and does not distort.

[0042] In fact tests have shown that use of the device of the invention decreases substantially the amount of gas (or time) required to achieve the same type of cooking as with burners without the subject device. In particular, testing demonstrated that without the present inventive device, bringing three quarts of water to a boil at maximum gas flow required 15.43 minutes and 2.11 cubic feet of gas. On the other hand, when using the inventive stove top or burner device, bringing the same three quarts of water to a boil using maximum gas flow, required only 13.26 minutes and only 1.78 cubic feet of gas.

[0043] The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not as restrictive. The scope of the invention is, therefore, indicated by the appended claims and their combination in whole or in part rather than by the foregoing description. All changes that come within the meaning and range of equivalency of the claims are to be embraced within their scope.

I claim:

- 1. A burner system for a gas range top comprising:
 - a burner floor;
 - a burner head resting above a floor, said burner head forming gas flames when lit;
 - a metal grill disposed over the head to support a cooking utensil; and
 - a device situated underneath said grill and having a cylindrical inner surface disposed about said head for directing said gas flame and hot gases associated therewith upwardly toward the utensil bottom and restricting said flame and said hot gases in a lateral direction.
- 2. The system of claim 1 wherein said device includes a ring made of a thermal insulator and a support arranged and constructed to hold said ring at a predetermined height with respect to said head.
- 3. The system of claim 2 wherein, said ring is made of a ceramic material.

4. The system of claim 4 wherein said support is made of a metallic alloy.

5. The system of claim 5 wherein said support is made of an alloy that resists warping and discoloration when exposed to said hot gases and said flame.

6. The system of claim 3 wherein, said support includes an annular body and a plurality of legs bendable with respect to said body.

7. The system of claim 4 wherein, said ring has a diameter of substantially 4.5-5.5 inches.

8. The system of claim 6 wherein said annular body includes a lip for forming a seat for said ring.

9. The system of claim 1 wherein said device is a tubular metallic ring.

9. A device for increasing the efficiency of a stove top burner having a burner floor, a head disposed above said floor through which a gas is expelled to generate a flame when lit and a grill disposed above said head to support a cooking utensil, said device comprising:

a body having a cylindrical inner surface disposed at the same level as and concentrically around said head, said body being sized and shaped to restrict laterally said flame and hot gases formed.

10. The device of claim 9 wherein said body extends upwardly to contact said grill.

11. The device of claim 9 further comprising a support for positioning said body on said floor.

12. The device of claim 11 wherein said body is formed of a metal sheet and said support includes a plurality of metal legs integral with said body.

13. The device of claim 11 wherein said body is a ceramic ring and said support includes a plurality of metal legs.

14. The device of claim 13 wherein said legs are attached to said ceramic ring.

15. The device of claim 13 wherein support includes an annular body sized and shaped to hold said ceramic ring and said legs are attached to said support.

16. The device of claim 15 wherein annular body includes an inner lip sized to form a seat for said ceramic ring.

18. The device of claim 13 wherein said support is made of metallic alloy that resists discoloration and warping when heated by the flame from the head.

19. The device of claim 15 wherein said legs are bendable with respect to said annular body to adjust the height of said ceramic ring.

* * * * *